



Effectiveness Of An Educational Intervention On Promoting Evidence-Based Practices For Pain Management During Labor And Delivery Among Staff Nurses Working In Selected Hospitals

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Abstract

Background

Pain management during labor is an essential component of quality maternal healthcare. Evidence-based pain management practices improve maternal comfort, childbirth experience, and maternal and neonatal outcomes. However, many staff nurses have inadequate knowledge and inconsistent implementation of evidence-based pain management techniques. Educational interventions can enhance nurses' competency and improve the quality of obstetric care.

Objectives

To assess the effectiveness of an educational intervention on promoting evidence-based knowledge and practices regarding pain management during labor and delivery among staff nurses working in selected hospitals.

Materials and Methods

A **quantitative evaluative research approach** with a **pre-experimental one-group pre-test and post-test design** was adopted. The study was conducted among **100 staff nurses** working in selected hospitals. Participants were selected using a convenient sampling technique. Data were collected using a structured knowledge questionnaire (30 items) and an observational checklist (35 items). After the pre-test, participants received a structured educational intervention consisting of lectures, demonstrations, PowerPoint presentations, videos, WHO guidelines, and interactive discussions. The post-test was conducted seven days after the intervention. Data were analyzed using descriptive and inferential statistics.

Results

The study included **100 staff nurses** working in selected hospitals. Following the educational intervention, a significant improvement was observed in both knowledge and evidence-based practices related to pain management during labor and delivery. The mean knowledge score increased from 15.68 ± 3.42 in the pre-test to 25.48 ± 2.71 in the post-test (**Mean Difference = 9.80; $t = 24.61$; $p < 0.001$**). Similarly, the mean practice score improved from 18.26 ± 3.87 before the intervention to 29.74 ± 2.96 after the intervention (**Mean Difference = 11.48; $t = 27.84$; $p < 0.001$**). Furthermore, statistically significant associations were found between post-test knowledge and practice scores and selected demographic variables, including **educational qualification, years of clinical experience, and previous training on labor pain management** ($p < 0.05$). These findings indicate that the educational intervention was highly effective in enhancing staff nurses' knowledge and promoting evidence-based pain management practices during labor and delivery.

Conclusion

The structured educational intervention significantly improved staff nurses' knowledge and evidence-based practices regarding labor pain management. Regular continuing nursing education programmes should be implemented to strengthen evidence-based maternity care.

Keywords: Evidence-based practice, labor pain, educational intervention, staff nurses, maternal health, obstetric nursing.

Introduction

Labor pain is one of the most intense forms of physiological pain experienced by women during childbirth. Appropriate pain management not only enhances maternal comfort but also improves labor outcomes, maternal satisfaction, and neonatal wellbeing. International organizations such as the World Health Organization (WHO) recommend the use of evidence-based non-pharmacological and pharmacological interventions for labor pain management.

Despite these recommendations, many healthcare facilities continue to rely on traditional practices because of inadequate knowledge, insufficient clinical training, limited institutional protocols, and poor adherence to evidence-based guidelines. Staff nurses play a central role in providing continuous intrapartum care and are responsible for assessing pain, educating mothers, implementing comfort measures, monitoring maternal and fetal wellbeing, and collaborating with obstetric teams.

Educational interventions have consistently demonstrated positive effects on improving nurses' knowledge, clinical competency, and evidence-based decision-making. Therefore, strengthening nurses' competencies through structured educational programmes can significantly improve the quality of labor pain management.

Need of the Study

Labor pain is a natural physiological process, but effective pain management is essential to ensure a safe, positive, and satisfying childbirth experience. The **World Health Organization (WHO)** recommends that every woman should receive respectful maternity care, including access to evidence-based pain management interventions during labor and delivery. Appropriate pain relief not only reduces maternal discomfort but also minimizes stress, enhances maternal cooperation, promotes normal labor progression, and improves both maternal and neonatal outcomes.

Staff nurses are the primary healthcare professionals responsible for providing continuous care to women during labor. They play a vital role in assessing pain, offering emotional support, implementing non-pharmacological pain relief techniques (such as breathing exercises, relaxation, massage, positioning, and

continuous labor support), administering pharmacological interventions when indicated, and educating women about pain management options. Therefore, their knowledge and competency directly influence the quality of intrapartum care.

Despite the availability of evidence-based guidelines, many nurses continue to rely on routine or traditional practices due to inadequate knowledge, lack of continuing education, limited clinical training, and insufficient exposure to updated evidence-based recommendations. Studies have reported gaps in nurses' understanding and application of effective labor pain management strategies, resulting in inconsistent practices and reduced quality of maternal care. These deficiencies highlight the need for structured educational programmes that enhance nurses' knowledge, clinical skills, and confidence in implementing evidence-based interventions.

Educational interventions have been shown to improve healthcare professionals' knowledge, attitudes, and clinical performance by promoting the integration of current scientific evidence into daily practice. Regular in-service education and competency-based training can strengthen nurses' ability to provide safe, effective, and woman-centered care during labor.

Considering the importance of evidence-based labor pain management and the pivotal role of staff nurses, there is a clear need to evaluate the effectiveness of educational interventions in improving their knowledge and clinical practices. The findings of this study will help nursing educators, hospital administrators, and policymakers develop effective training programmes, strengthen continuing nursing education, standardize clinical practice, and ultimately improve the quality of maternal healthcare services. The study will also contribute to achieving national and international goals related to safe motherhood, respectful maternity care, and improved maternal and neonatal health outcomes.

Objectives of the Study

1. To assess the pre-test knowledge and practices of staff nurses regarding evidence-based pain management during labor and delivery.
2. To evaluate the effectiveness of the educational intervention on knowledge and practices of staff nurses.
3. To compare the pre-test and post-test knowledge and practice scores.
4. To determine the association between post-test scores and selected demographic variables.

Research Hypotheses (Short)

H1: The educational intervention will significantly improve the knowledge of staff nurses regarding evidence-based pain management during labor and delivery.

H2: The educational intervention will significantly improve the evidence-based practices of staff nurses regarding pain management during labor and delivery.

H3: There will be a significant association between post-test knowledge and practice scores and selected demographic variables of staff nurses.

Materials and Methods

Research Design

The study employed a **pre-experimental one-group pre-test and post-test research design** to evaluate the effectiveness of an educational intervention on promoting evidence-based practices for pain management during labor and delivery among staff nurses. This design enabled the comparison of participants' knowledge and clinical practices before and after the educational intervention.

Research Approach

A **quantitative evaluative research approach** was adopted to objectively assess the effectiveness of the structured educational intervention among staff nurses.

Study Setting

The study was conducted in **selected hospitals** providing maternity and obstetric services in **Indore, Madhya Pradesh**.

Study Population

The target population comprised **registered staff nurses** working in labor rooms, maternity wards, and obstetric units of the selected hospitals.

Sample Size

A total of **100 staff nurses** participated in the study.

Sampling Technique

Participants were selected using a **non-probability convenience sampling technique** based on the eligibility criteria and willingness to participate.

Inclusion Criteria

Staff nurses who fulfilled the following criteria were included in the study:

- Registered staff nurses working in labor room, maternity, or obstetric units.
- Having at least **six months of clinical experience**.
- Able to understand and communicate in Hindi or English.
- Willing to provide written informed consent and participate in the study.

Exclusion Criteria

Staff nurses with the following conditions were excluded:

- Nurses on long-term leave during the data collection period.
- Nursing interns and student nurses.
- Nurses who had attended a structured educational programme on evidence-based labor pain management within the previous six months.
- Staff nurses unwilling to participate.

Research Instruments

Section A: Demographic Profile

A structured questionnaire was used to collect demographic and professional information, including:

- Age
- Gender
- Educational qualification
- Years of clinical experience

- Area of work
- Previous training on labor pain management
- Attendance at continuing nursing education programmes

Section B: Structured Knowledge Questionnaire

Knowledge regarding evidence-based pain management during labor and delivery was assessed using a **30-item structured questionnaire** covering the following areas:

- Physiology of labor pain
- Pain assessment methods
- Non-pharmacological pain management techniques
- Pharmacological pain management
- WHO recommendations
- Continuous labor support
- Maternal positioning
- Breathing and relaxation techniques
- Documentation and monitoring
- Evidence-based nursing guidelines

Each correct response was awarded **one mark**, while incorrect responses received **zero marks**. The maximum attainable score was **30**.

Knowledge Score Interpretation

- **Poor Knowledge:** 0–10
- **Average Knowledge:** 11–20
- **Good Knowledge:** 21–30

Section C: Evidence-Based Practice Checklist

Evidence-based practices were assessed using a **35-item structured observational checklist** evaluating staff nurses' implementation of recommended labor pain management interventions, including:

- Pain assessment using standardized tools
- Emotional support during labor
- Breathing and relaxation techniques
- Position changes
- Massage therapy
- Continuous labor support
- Hydrotherapy (where available)
- Appropriate use of pharmacological pain relief
- Monitoring maternal and fetal well-being
- Documentation of pain management interventions

Each correctly performed practice was scored **one mark**, giving a maximum possible score of **35**.

Practice Score Interpretation

- **Poor Practice:** 0–11
- **Average Practice:** 12–23
- **Good Practice:** 24–35

Validity and Reliability

The research instruments were reviewed by experts in **Obstetrics and Gynecological Nursing, Medical-Surgical Nursing, Nursing Education, Obstetrics and Gynecology**, and **Biostatistics** to establish content validity.

Reliability of the knowledge questionnaire and practice checklist was assessed using **Cronbach's alpha**, yielding coefficients **greater than 0.80**, indicating good internal consistency.

Data Collection Procedure

Prior permission was obtained from the concerned hospital authorities before commencing the study. Eligible staff nurses were informed about the purpose of the research, and written informed consent was obtained.

A **pre-test** was conducted using the structured knowledge questionnaire and evidence-based practice checklist. Immediately after the pre-test, participants received the structured educational intervention.

Educational Intervention

The structured educational intervention lasted approximately **60 minutes** and included lectures, PowerPoint presentations, demonstrations, videos, interactive discussions, and printed educational materials.

The educational content covered:

- Physiology of labor pain
- Principles of evidence-based practice
- WHO recommendations for intrapartum care
- Pain assessment techniques
- Non-pharmacological pain management methods
- Pharmacological pain relief options
- Continuous labor support
- Maternal positioning and mobility
- Communication and emotional support
- Documentation of pain assessment and interventions
- Safe and respectful maternity care

Participants were encouraged to implement the evidence-based practices in their routine clinical care.

Post-test Evaluation

A **post-test** was conducted seven days after the educational intervention using the same structured knowledge questionnaire and evidence-based practice checklist to determine the effectiveness of the educational programme.

Ethical Considerations

Ethical approval was obtained from the **Institutional Ethics Committee** before the initiation of the study. Written informed consent was obtained from all participants. Confidentiality, anonymity, and privacy were maintained throughout the study. Participation was entirely voluntary, and participants had the right to withdraw from the study at any stage without any consequences.

Statistical Analysis

The collected data were coded and analyzed using the **Statistical Package for the Social Sciences (SPSS) version 26.0**.

Descriptive statistics, including **frequency, percentage, mean, and standard deviation**, were used to summarize the data. Inferential statistics such as the **paired t-test** were used to compare pre-test and post-test knowledge and practice scores, while the **Chi-square test** was applied to determine the association between post-test scores and selected demographic variables. A **p-value of less than 0.05** was considered statistically significant.

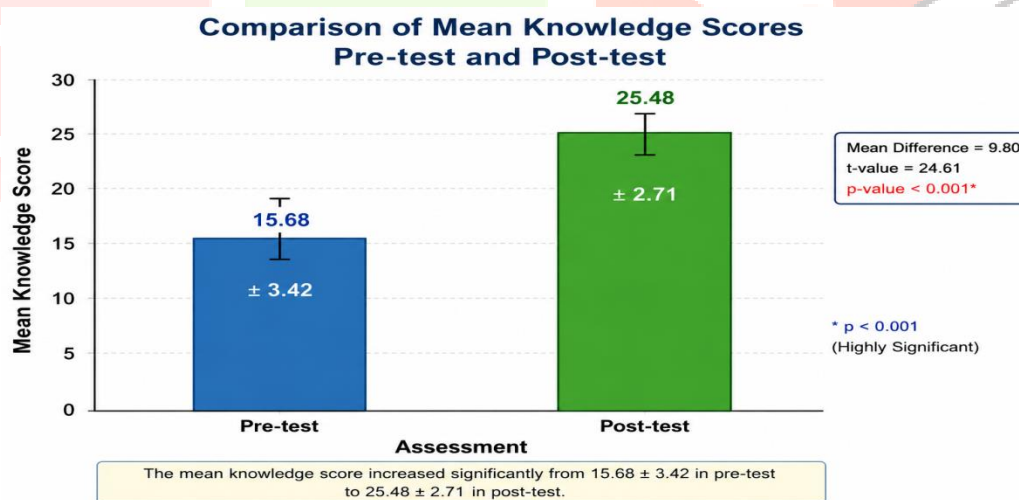
Results

Demographic Characteristics of Staff Nurses (n = 100)

Among the 100 staff nurses, **39%** were in the age group of **26–30 years**, followed by **25%** aged **31–35 years**, **24%** aged **21–25 years**, and **12%** were above **35 years**. The majority (**84%**) were female, while **16%** were male. Regarding educational qualification, **52%** had a **B.Sc. Nursing**, **38%** had a **GNM** qualification, and **10%** had an **M.Sc. Nursing** degree. Nearly **46%** had **2–5 years** of clinical experience, **33%** had more than **5 years**, and **21%** had less than **2 years** of experience. About **62%** had not attended any previous training programme on evidence-based labor pain management.

Table 1. Comparison of Knowledge Scores Before and After the Educational Intervention (n = 100)

Assessment	Mean ± SD	Mean Difference	t-value	p-value
Pre-test	15.68 ± 3.42			
Post-test	25.48 ± 2.71	9.80	24.61	<0.001*

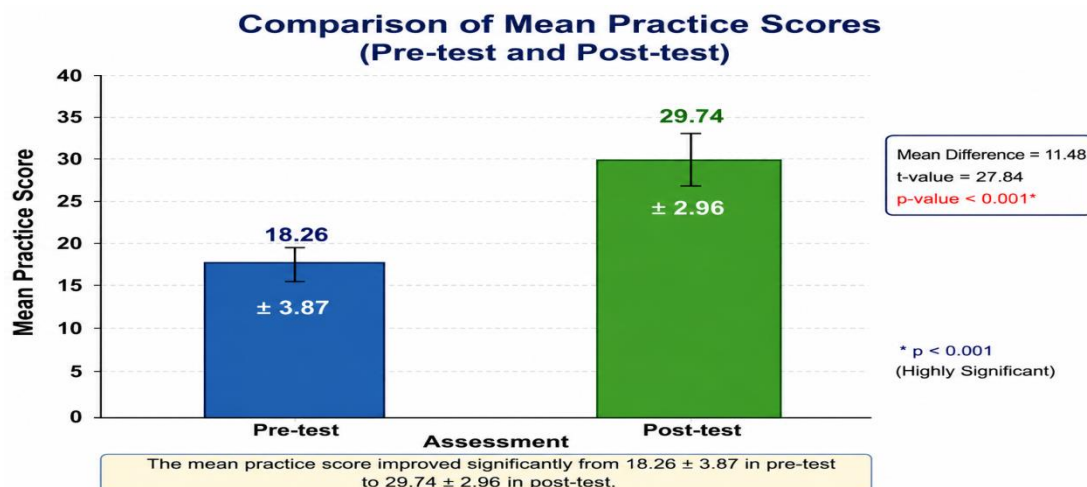


Interpretation:

The mean knowledge score increased from **15.68 ± 3.42** in the pre-test to **25.48 ± 2.71** in the post-test. The paired *t*-test showed a statistically highly significant improvement (**t = 24.61, p < 0.001**), indicating that the educational intervention effectively enhanced staff nurses' knowledge regarding evidence-based pain management during labor and delivery.

Table 2. Comparison of Practice Scores Before and After the Educational Intervention (n = 100)

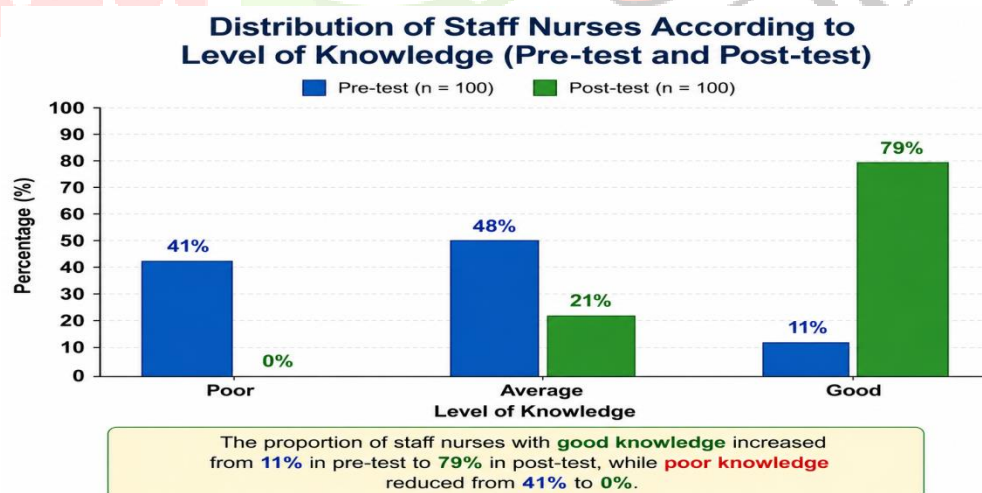
Assessment	Mean $\pm$ SD	Mean Difference	t-value	p-value
Pre-test	18.26 $\pm$ 3.87			
Post-test	29.74 $\pm$ 2.96	11.48	27.84	<0.001*

**Interpretation:**

The mean practice score increased significantly from **18.26 $\pm$ 3.87** in the pre-test to **29.74 $\pm$ 2.96** in the post-test. The difference was statistically highly significant (**t = 27.84, p < 0.001**), demonstrating that the educational intervention effectively improved evidence-based clinical practices among staff nurses.

Table 3. Distribution of Staff Nurses According to Knowledge Level (n = 100)

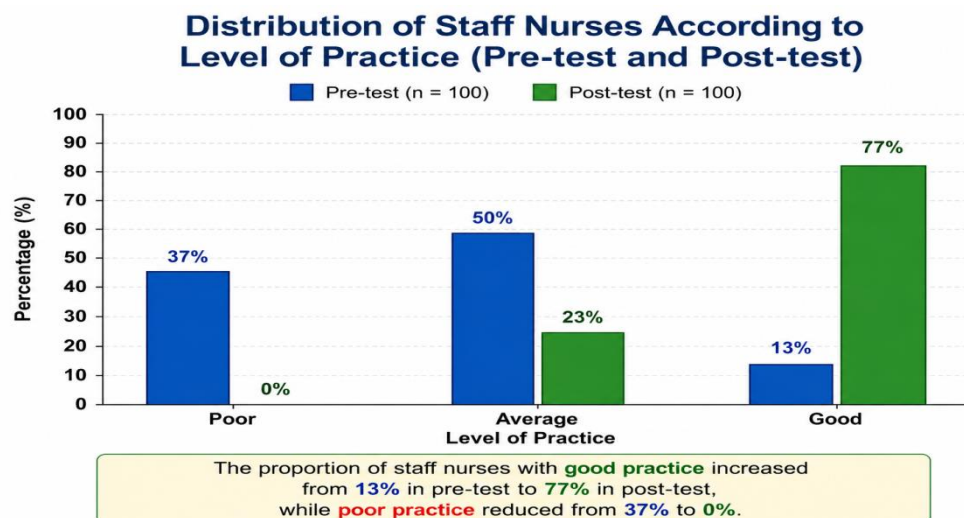
Knowledge Level	Pre-test n (%)	Post-test n (%)
Poor	41 (41%)	0 (0%)
Average	48 (48%)	21 (21%)
Good	11 (11%)	79 (79%)

**Interpretation:**

Before the educational intervention, most staff nurses (**48%**) had average knowledge, while **41%** had poor knowledge. After the intervention, **79%** achieved a good level of knowledge, indicating substantial improvement.

Table 4. Distribution of Staff Nurses According to Practice Level (n = 100)

Practice Level	Pre-test n (%)	Post-test n (%)
Poor	37 (37%)	0 (0%)
Average	50 (50%)	23 (23%)
Good	13 (13%)	77 (77%)

**Interpretation:**

Prior to the intervention, half of the participants (50%) demonstrated average practice and 37% had poor practice. Following the educational intervention, 77% demonstrated good evidence-based pain management practices.

Association Between Post-test Knowledge Scores and Selected Demographic Variables

A statistically significant association was found between post-test knowledge scores and **educational qualification**, **years of clinical experience**, and **previous training on labor pain management** ($p < 0.05$). No significant association was observed with age or gender ($p > 0.05$).

Major Findings

- The educational intervention significantly improved the knowledge of staff nurses regarding evidence-based pain management during labor and delivery ($t = 24.61$, $p < 0.001$).
- The educational intervention significantly improved the evidence-based clinical practices of staff nurses ($t = 27.84$, $p < 0.001$).
- The proportion of nurses with **good knowledge** increased from **11%** to **79%** after the intervention.
- The proportion of nurses demonstrating **good practice** increased from **13%** to **77%** after the intervention.
- Educational qualification, years of experience, and previous training were significantly associated with post-test knowledge scores. These findings indicate that the educational intervention was effective in enhancing both knowledge and evidence-based pain management practices among staff nurses.

Discussion

The present study demonstrated that the educational intervention significantly improved the knowledge and evidence-based practices of staff nurses regarding pain management during labor and delivery. The mean knowledge and practice scores increased significantly in the post-test compared with the pre-test ($p < 0.001$), indicating the effectiveness of the intervention. A significant association was also found between post-test scores and selected demographic variables, including educational qualification, years of experience, and previous training. These findings suggest that regular educational programmes can enhance nurses' competency, promote evidence-based labor pain management, and improve the quality of maternal care.

Conclusion

The study concluded that the educational intervention was effective in significantly improving the knowledge and evidence-based practices of staff nurses regarding pain management during labor and delivery. The findings highlight the importance of regular continuing nursing education and in-service training to strengthen evidence-based maternity care, improve the quality of intrapartum services, and promote better maternal outcomes.

Recommendations

1. Regular educational and in-service training programmes should be conducted for staff nurses on evidence-based pain management during labor and delivery.
2. Evidence-based labor pain management guidelines should be incorporated into routine nursing practice.
3. Periodic competency assessments should be conducted to reinforce knowledge and clinical skills.
4. Similar studies should be carried out with larger sample sizes and in different healthcare settings to validate the findings.
5. Continuous professional development programmes should be encouraged to improve the quality of maternal healthcare services.

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